

University of Dundee

The Dutch disease

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Published in:
International Journal of Management Concepts and Philosophy

DOI:
[10.1504/IJMCP.2014.063848](https://doi.org/10.1504/IJMCP.2014.063848)

Publication date:
2014

Document Version
Peer reviewed version

[Link to publication in Discovery Research Portal](#)

Citation for published version (APA):
Morelli, C. (2014). The Dutch disease: the role of industrial policy for industrial transformation – the case of the jute industry. *International Journal of Management Concepts and Philosophy*, 8(2-3/2014), 156-167.
<https://doi.org/10.1504/IJMCP.2014.063848>

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The Dutch disease: the role of industrial policy for industrial transformation – the case of the jute industry

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Abstract: Often referred to as the ‘Dutch disease’ economies with resource advantages or specific specialisations can be highly resistant to change and as a result enter a period of absolute decline. These economies, or industries, very specialisation then becomes a barrier to further development when technologies and the world economy evolve. This paper critically examines the impact of this ‘Dutch disease’ in relation to a case study of the jute textile industry and its relationship to the Scottish city of Dundee. The paper however demonstrates that this sclerotic behaviour cannot be fully understood without also considering the dynamic elements that were also evident in the jute firms as the industry diversified out of jute and into artificial fibres.

Keywords: jute; Dutch disease; relative economic decline; Scotland; employment; competition; industrial policy.

Reference to this paper should be made as follows: Morelli, C. (xxxx) ‘The Dutch disease: the role of industrial policy for industrial transformation – the case of the jute industry’, *Int. J. Management Concepts and Philosophy*, Vol. x, No. x, pp.xxx–xxx.

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This paper is a revised and expanded version of a paper entitled ‘Industrial policy and industrial transformation: the case of the jute industry’ presented at the *Scottish Business and Industrial History Conference*, University of Stirling, x–x March, 2014.

Author: Please supply date of conference.

1 Introduction

The evolution of economies from one set of industrial technologies into a newer more advanced set of industrial technologies has been a continuous focus of attention for economists and economic historians. Since Adam Smith’s recognition of the advantages of specialisation for British capitalism through to Alfred Chandler’s focus upon the importance of three pronged investment strategies, or Harry Braverman’s identification

of monopoly capitalism for the rise and dominance of US industrial capitalism in the 20th century, economic transitions have been a major focus of attention. While progress and advance are readily identified, or critiqued in the case of Braverman, failure and decline are less well documented. One area where a focus upon problems of development have arisen is the suggestion that specific economies, or regions and industries, become inhibited to further economic change by a previous set of advantages arising from specialisation. Often referred to as the 'Dutch disease' economies with resource advantages or specific specialisations can be highly resistant to change and as a result enter a period of absolute decline. In these economies, or industries, specialisation then becomes a barrier to further development when technologies and the world economy evolves.

Institutional economists and political scientists have attempted to locate the drivers for the problems of long-run development within the institutional history of capitalist development. Douglas North's reliance upon Schumpeterian creative destruction and Mancur Olson's distributional coalitions encouraging the rise of sclerotic economic tendencies are two of the common approaches within business and economic history (North, 1981; Olson, 2008). In doing so institutional schools of thought have attempted to provide an explanation for economic crisis which does not rely upon Marx's recognition of the crisis of accumulation within capitalist development (Harman, 1984).

This paper examines the impact of this 'Dutch disease' in relation to a case study of the UK's jute textile industry and its relationship to the Scottish city of Dundee where its production was concentrated. In the case of the jute industry we can identify the classic features of sclerotic behaviour. Jute, as with other staple industries of the first industrial revolution, saw the role of government increase as the industry suffered from the effects of international competition following the increasing levels of industrialisation across the world. Thus, as free trade before the First World War gave way to industry-level voluntary agreements in the interwar years so direct government intervention developed in response to the failure of industry-level voluntary coordination (Scottish Council, 1961; Lenman et al., 1969; Walker, 1979). The emergence of centralised government importation of jute goods by 1939 was understood as a key factor in this process and a key factor in the survival of the industry (Tomlinson et al., 2011). The industry also saw the emergence of further government initiated policy coinciding with the movement towards competition as the government itself withdrew support for price fixing and cartel arrangements. The continuation of the government's role in jute, longer than other industries after the Second World War, can again be identified as a feature of this 'feather-bedding' linked to the features of the Dutch-disease (Mercer et al., 1992). Finally, Jute was also one of the industries which suffered from the shock of competition policy, following the industry's failure to win support for its collusive agreements at the Restrictive Trades Practices Court in 1963 (Howe, 1982).

In the city of Dundee we can also readily identify the problems associated with the Dutch disease. Dundee, and its surrounding area, was responsible for over 90% of the industry's output. As a consequence jute was responsible for some 40% of all employment within the city during its heyday. When the industry went into decline so too did the city with the result that unemployment levels in Dundee were amongst the worst in the UK. For those in work the industry pay rates were also amongst the lowest of all manufacturing sectors in the UK. Dundee thus became a city characterised by high unemployment and low wage rates. Attempts to diversify the employment patterns within the city were pursued from the 1930s onwards but as newer manufacturing industries

themselves went into crisis so the longer term history of high unemployment resurfaced. It was the failure of these employment encouraging strategies that finally led government itself to take a more active role in providing employment by the end of the 20th century.

This paper examines the role of government support for the jute industry in terms of its institutional influence on the firms involved and the consequences this support has for our understanding of the Dutch disease. In particular, the paper highlights the inability of the institutional literature to understand the important role played by government as the jute industry's firms successfully developed diversification strategies, both in related industries and unrelated industries. This support ensured that while we saw the demise of the jute industry itself we did not see the demise of the major firms within the industry. Instead we see a process more correctly identified as economic transformation rather than relative economic decline (Tomlinson et al., 2011). However, ultimately this support was incapable of overcoming the wider crisis of competitiveness facing manufacturing industry across the UK by the 1970s and as a result government took a more active role in maintaining employment within the city by the end of the century by directly replacing lost private sector employment. In conclusion, the paper suggests, the case study of jute provides a useful example of the role of government in facilitating economic transition. As such, jute provides a counter example to the economic arguments against industrial policy in a globalised economy; the growth of importance for the price mechanism and the market far from negating industrial policy suggests a greater role for government within the private sector in order to overcome negative externalities created by initial competitive advantages.

The format for this paper is; first, Section 2 reviews the literature on the rise of industrial policy and British economic relative economic decline, and specifically focuses upon the economic arguments over government's action to limit the price mechanism. Section 3 briefly outlines the history of the Dundee jute industry after 1945 before highlighting the diversification strategies of the two largest manufacturers Jute Industries and Low & Bonar. Section 4 then examines the impact of the crisis of the 1970s and 1980s on both the jute industry and other industries in the city of Dundee. Finally, in conclusion, the paper suggests industrial policy played a major role in encouraging the transformation of companies out of one industry and into another.

2 The Dutch disease and industrial policy

Explaining the demise of industries is arguably of greater importance than explaining their growth. The ability of economies to sustain their economic position and the living standards of their populations requires a means by which economies can develop and manage the transition from one form of economic development to another. Yet our understanding of these transitions is limited. The very same explanations for the advance of economies is also utilised to explain their failure. Indeed, the Dutch disease is one such terminology given to this dilemma. The Dutch disease, named after the 19th century relative economic decline of Holland as an early industrial economy, is suggested to arise as a result of specialisation and competitive advantage. Economies or regions which are capable of achieving a competitive advantage in a specific sector can potentially generate higher rates of return compared to other industries and therefore crowd-out investment in more diverse industrial sectors. Once, the higher rates of return in the specialised sectors are competed away, perhaps by international competition, these economies or regions can

then fall into relative decline due to an inability to rapidly develop newer more competitive sectors. Work on the deleterious consequences of specialisation is however inconclusive. Michaels suggests resource abundance and specialisation may lead to economic convergence for economies while Humpreys et al. suggest there may be long-term costs involved in such specialisation (Michaels, 2010; Humpreys et al., 2007). Much of the result is determined by the way in which overhead capital formation, human capital and networks of finance and entrepreneurship are understood to be more, or less, responsive to increasing competitiveness within the established industries.

One of the responses to crises of competitiveness within established economies has been the development and utilisation of industrial policy by governments. Industrial policy has a long and detailed history. Early forms of government regulation of industrial development can be dated back at least to the formation of monopoly companies in the form of the government sponsored trading companies (Daunton, 1995). More commonly, however, industrial policy can be considered to have evolved in the 20th century in response to the collapse of free trade and the Great Depression.

In the UK especially, the development of a ‘managed economy’ from the interwar years and extended further, following the successful organisation of industry in wartime, into the post-war era marked a new era in government’s role within the private economy (Howson, 1975; Middleton, 1988; Peden, 1988). By the end of the 1970s the encroachment of industrial policy into the area of the private market was beginning to be rolled-back. Government’s growing awareness of the weakness of competition within the private sector, drives towards utilising market incentives to enforce efficiency and a growing awareness of relative economic decline were all suggested to derive from the dominance of industrial policy as a ‘feather-bed’ protecting inefficiency (Cannadine, 1997, pp.261–284). A low productivity consensus in which strong labour organisation colluded with a conservative management to prevent economic efficiency is suggested to have characterised the UK economy (Elliott and Atkinson, 1999, p.36). As such industrial policy was now increasingly being described within a ‘declinist literature’ as a cause rather than a cure for market failure (Bean and Crafts, 1996, pp.131–172; Broadberry and Crafts, 1996, pp.65–91; Barnett, 1972).

One of the original contributions to the declinist school of thought came from Bacon and Eltis (1978, pp.92–116) who suggested that government policy increasingly ‘crowded-out’ scarce resources out of a productive traded sector. Growing government involvement in the private sector is suggested to have created a crisis of demand whereby private investment was unable to compete, ‘crowded out’, by an ever increasing demand for resources by the public sector. Part of this crowding-out arose from an implicit post-war social contract between labour, government and employers. These rational choice views suggest the commitment to high welfare expenditure acted as a quid-pro-quo for governments’ minimalist approach to competition policy within the private sector (Bean and Crafts, 1996, pp.140–142). Broadberry and Crafts, while acknowledging the short term benefits of the post-war consensus, maintain that the “post-war settlement and gradualist approach to the transition from war to peace had long-run costs in terms of forgone productivity” (Broadberry and Crafts, 1996, p.42). In the long-run, in the British case, an institutionalised weakness emerged whereby market-based incentive structures reduced the requirement to focus upon rapid productivity growth (Crafts, 1993, p.49). The absence of any alternative mechanisms for the destruction of these institutional limitations upon growth itself then led to further path-dependent sub-optimal choices. In Eichengreen’s work market failure occurs due to coordination problems, itself arising

from market failures embedded within the institutional failure generating weak market signals. As a result economic actors are unable to establish new markets to satisfy latent demand or supply and innovation is undermined (Eichengreen, 1996, p.217). Britain is then suggested to have developed a damaging circularity in which distributional coalitions and cosy post-war deals restricted possibilities of growth and entrenched economic sclerosis (Olson, 1965; Broadberry and Crafts, 1996, p.86).

An alternative approach suggests that the British experience of post-war relative economic decline derived not from industrial policy per se but from the economy's inability to transform itself along either the path of the most market-focused economy, the USA, or the more statist economies in Western Europe (Shonfield, 1965; Hall and Soskice, 2002; Jullien and Smith, 2011, pp.358–383). The 'varieties of capitalism' literature is the latest form of this literature whereby a focus upon the institutional failures of government, employers and labour within the British economy provides the explanation for the low productivity, high wage and social contract consensus resulting in relative economic decline. Zeitlin and Trubeck (2003), within this literature, extend this argument further by suggesting that alternative, government led, institutional forms are available within the contemporary form of global capitalism for the regulation of work and welfare.

The Dutch disease is thus rooted in institutional understandings of economic development. Much of this analysis is also combined with a focus upon an apparent failure to develop managerial capitalism with firms' inability to gain access to capital for investment, due to imperfect capital markets, to create a specific 'Anglo-Saxon' form of capitalist development (Hall and Soskice, 2002). Irrespective of ideological approach to Government's increasing role within the private economy is thus central to explanations of British economic development. This is especially true of the growth of industrial policy in the 20th century in discussions of economic management, productivity shortcomings and ultimately relative economic decline, where it becomes an explanatory factor for relative economic decline. From popular accounts of writers such as Barnett and Hutton to more academic studies including Broadberry and Crafts, Cairncross, Phelps-Brown and Tomlinson industrial policy continues to play an important yet contentious part in these debates (Tomlinson, 2000).

Within the economics literature a similar set of ideas can be found in which market distortions, arising from trade policies, are said to have acted to fetter the price mechanism. Monopolistic rent-seeking and dead-weight social losses arise due to government intervention placing limits upon the price mechanism. Within economics there is some dissent over this neo-classical approach. In the 1980s 'New Trade Theory' highlighted the role of market failure within capital markets as a justification for the continued role of industrial policy. Nevertheless, although government intervention was now justified in terms of 'complex trade policies', namely defending infant industries, introducing minimum labour standards or counter-acting unfair terms of trade, industrial policy still remained a second best solution with reference to free trade (Krugman et al., 2012, pp.258–263). Today industrial policy, within a free-trade environment, has a focus upon government's role in the development of comparative advantage through supply side reforms. Industrial 'clusters' of factors of production are, it is suggested, capable of achieving industrial economies of scale and scope arising from agglomeration effects external to the firm, for example in the form of human capital acquisition within the labour process deriving from specialisation (Audretsch, 2000, pp.63–81).

The jute industry, as we will now seek to highlight, provided government with an example of such a complex trade policy. How could welfare and employment be protected in a highly specialised local economy when moving from protectionism to free trade? It was to prove a more complex trade problem than was to arise in the case of other staple industries such as cotton, coal or shipbuilding precisely because of the institutional context in which these industries had emerged.

3 Managing the decline of jute

Jute, an industrial textile of the first industrial revolution, was used extensively in bagging, sacking and rope manufacture. It was therefore a textile of great significance for the transportation of bulk goods such as food stuffs and building materials from the 19th century onwards. Dundee's jute industry, accounting for over 90% of UK output, was an industrial cluster where external economies of scale generated significant comparative advantages in its early years. Jute was a leading sector in the industrialisation of Scotland in the 19th century generating large financial profits which were reinvested in the expansion of the domestic industry or transferred into finance capital through the development of Investment Trusts. However, by the early 20th century its relative decline was evident. The history of the decline of the jute industry is a classic case of a staple industry of the first industrial revolution. International competition brought with it a rapidly falling share of world markets, falling market share led to low levels of domestic investment and the resultant high levels of domestic unemployment for jute workers by the interwar years. The First and Second World Wars provided a return to profitability but this was only temporary with the return of international competition from the 1920s and again the 1950s as world markets re-emerged. Thus the post Second World War international competition, from within the Commonwealth, represented the return of competitive pressures which had been in existence since before the First World War (Walker, 1979; Stewart, 1998).

Government support for the industry in the form of 'Jute Control', introduced shortly before the outbreak of the Second World War, utilised government's centralised buying and price fixing arrangements to provide the institutional stability for the industry after 1945 until these supports were weakened from 1957 and eventually abolished in 1969. This institutional support was the key difference with the interwar years and permitted a slow managed contraction of the industry to take place in contrast to the collapse which had been apparent in the 1920s and 1930s. Between 1958 and 1963 the number of firms fell from 64 to 44, while the number of factories fell from 89 to 76 (UK Census of Production, 1963, 79, table 1). However, while rationalisation of production took place it was not the case that the industry itself was contracting, rather the industry was becoming more specialised in higher value outputs. With the exception of production of low value jute yarn, *Census of Production* data indicates that output was either static or even rising in specific areas. Hessian twill used in the carpet industry, linoleum quality hessian and other woven cloths together saw small increases in output from 1,331 to 1,478 cwt tons in weight between 1958 and 1963, and a large expansion, of 65% in nominal values occurred in the still more specialised areas of production in jute tow, pulled, dyed and carded jute products (UK Census of Production, 1963, 79, table 5).

The growth of specialised jute product markets however encouraged a further intensification of the competitive threats from international producers; output of hessian

twill for carpets, hessian for linoleum and other woven cloths had by 1968 fallen 53% by quantity from the 1963 levels. Smaller falls were also occurring in the more specialised areas of dyed, carded and jute tow (UK Census of Production, 1968, 102, table 1 and (1971), PA415, table 1). As a result a second wave of rationalisation was to take place between 1969 and 1972. Firm's initial response in this later wave was to close plants and concentrate production. But this concentration of production itself gave way to amalgamation and merger, rationalisation and exit from the industry (UK Census of Production, 1968, PA415, 1972, table 1).

While the above indicates that the jute industry faced many of the traditional features of staple industries, and can readily be encompassed within the Olsonian framework of sclerotic institutional decline, not so readily understood is the fact that it was also in this period that jute firms themselves can be identified as rapidly adopting dynamic strategies of diversification out of jute.¹

In 1968 while artificial fibres amounted to under 2.9% of output by 1972 output of polypropylene alone accounted for over 27% of gross output and was the single largest commodity output of the industry, by quantity.² It is this diversification out of jute and initially into polypropylene and then into unrelated industries that is of particular interest here in relation to economic transformations and the Dutch disease. The two largest companies Jute Industries and Low and Bonar were at the forefront of these changes and it is to their experience that we now turn.

Jute Industries Ltd, formed in 1920 as a holding company, was the largest of the Dundee jute manufacturers (Guildhall Library (hereafter GL), Stock Exchange Yearbook, 1950, p.2449). In the first wave of rationalisation within the industry, in 1966, Jute Industries sought to centralise production through a reorganisation of production and creation of a single, and distinct, textile manufacturing division (GL, 1967, p.265). Simultaneously, Jute Industries was also beginning its diversification out of jute. The management of Jute Industries recognised that the USA was responsible for providing the impetus for its diversification into artificial fibres. It was argued that as US industry was "not keen on placing reliance on outside sources of raw materials", manufacturers of tufted carpets were keen to develop an alternative to jute, which could be produced and controlled within US borders (Sidlaw Industries, Company announcements, Dundee University Archive, (hereafter DUA), MS 66/10/15/2/1, 28th March 1980). In order to combat the threat posed by this Jute Industries began research and development into the possibility of weaving polypropylene plastic tapes for use as a backing cloth in the tufted carpet industry.

The second largest of the Dundee jute manufacturers Low & Bonar, formed out of a merger in 1912 and becoming a publicly limited company in 1947, followed a similar path to that of Jute Industries (Low & Bonar, Company Brochure, 1950). By the middle of the 1950s Low and Bonar was moving into the production of plastics for waterproofing tarpaulins and early cellulose production of film for packaging (Howe, 1982, p.74).

The simultaneous movement by the two largest jute manufacturers into related textiles was further formalised when in 1966 the two companies officially joined forces to form Polytape Ltd for the extrusion of polypropylene tapes and Synthetic Fabrics (Scotland) Ltd for the production and marketing of woven polypropylene fabrics. The formation of these two companies ensured Jute Industries and Low & Bonar continued to retain a large share of the domestic British market for primary tufted carpet backing as well as exports. Thus although polypropylene was a substitute for jute in carpet backing

the two companies were capable of continuing to dominate the market and prevent new entrants (Low & Bonar, 1981).

Polypropylene was to become a related diversification of an entirely different magnitude to earlier diversifications. As Craig et al., suggests it was responsible for transforming Dundee's "highly concentrated industry, based upon one product, into a part of a national textile industry" (Craig et al., 1980, p.9). As the data from the *Census of Production* described above indicates the two companies, and other competitor jute companies, rapidly understood the significance of synthetic fibres for the textile market. The two joint ventures, Polytape Ltd. and Synthetic Fabrics Ltd. would together play a prominent role in the development of artificial fibres for both Jute Industries and Low and Bonar.

By 1971 the management of Jute Industries, now renamed Sidlaw Industries to emphasise their movement out of the jute industry, had as its main focus diversification away from jute. The chairman, Sir John Carmichael, informed employees in Sidlaw News that diversification was now "the name of the game". While referring to the company's "major role in jute" and their hope that it would 'make progress' he 'pointed out that things changed and that industry had to change with them' (Sidlaw News, 1972). By 1972 jute was now a minor part of the organisation (Sidlaw Industries, 1972). In March 1972 it acquired the Aberdeen Service Company, a private partnership exploiting first mover advantages of opportunities in providing services for the exploration and drilling companies operating in the North Sea (Sidlaw Industries, Company announcements, 1984). Thus Jute Industries became an important early investor in the development of services for the North Sea oil industry.

For Low and Bonar the movement out of jute came from opportunities in related diversification. In 1977 it launched Flotex, a synthetic carpet manufacturing subsidiary, a venture described as the company's "new direction in textiles" (DUA, MS 24/1/7/1/3, 10 May 1979. 4 May 1982, DUA, MS 24/1/7/1/6). Low & Bonar were thus, increasingly focused upon diversification, as they suggested "constantly looking for new opportunities" in areas which it had not previously operated (DUA, MS 24/1/7/1/3, 10 May 1979. 4 May 1982, DUA, MS 24/1/7/1/6). Once this process of diversification had begun Low and Bonar's, as with Jute Industries, range of textile interests was almost unlimited such that by 1986 Bonar Textiles were applying their knowledge to a range of applications for non-woven textiles ranging from nappies, sanitary napkins, hospital masks and hats and durable products ranging from wall-coverings and blankets to inner linings for clothing and artificial grass surfaces for sports and display areas.

The experiences of Jute Industries and Low and Bonar do not fit neatly within the institutional focused theories of decline and the Dutch disease which fails to recognise the continuing dynamic element of capital accumulation. These dominant firms were capable of utilising their acquired production-based knowledge to move out of traditional textiles and into the related industries of artificial fibres and specialist location-based knowledge, particularly in the case of Jute Industries, to develop unrelated diversification strategies in services for a newly developing sector.

4 From industrial policy to employment policy

While the dominant jute firms may have proven to be much more flexible and dynamic than the Dutch disease or wider 'declinist' literature implies the costs of this continuing

dynamism were borne by the less than mobile working population located in Dundee. Industrial policy had seen a widening of industrial employment in Dundee throughout the 1950s and 1960s, such that by the end of the 1960s large-scale employment had been provided by a number of multi-national companies. Manufacturing and assembly work was to be found in a range of companies, most notably National Cash Register, Levi Jeans, Mitchelin and Timex (Hood and Young, 1982). The difficulty for the city lay in the fact that the crisis which decimated the remnants of the jute industry in the late 1960s and early 1970s also had a major negative impact on the newer industries. The result was that high levels of unemployment returned to Dundee for the first time since the 1930s and remained throughout the period from the 1970s to the 1980s.

Government policy increasingly became less one of protecting and encouraging private sector employment and instead became one of acting as the employer of last resort. The public sector saw employment in the city replace that of the jute industry, not to mention that of the newer industries as the basis for assembly and low skill labour declined. As Table 1 below shows whereas almost 40% of employment before the Second World War had been in the jute industry by the beginning of the 21st century this had declined to zero. By contrast while public sector employment prior to the Second World War was below 5% by the 21st century this had risen to the levels of importance jute had originally had at almost 40%.

Indeed, as Tomlinson shows in his paper in this volume this expansion of public sector employment came in the areas of health, public administration and education resulting in the first time in a substantial base for higher skill employment, something the private sector had never achieved (Table 1).

Table 1 Dundee employment in jute and the public sector

	<i>Dundee population</i>	<i>Insured population employed in jute (%)</i>	<i>Population employed in public sector (%)**</i>
1938	178,000	38.1*	3.4
1951	177,333	18.4	5.8
2006	142,170	0	38.5

Sources: Dobson and Partners (1952) and Appendix 4; Tomlinson et al. (2011), tables 7.2 and 7.4

Government's importance for employment, and living standards, within this framework needs to be understood in its totality rather than in relation to a specific industry or area. While industrial policy went into abeyance from the 1970s onwards it was replaced by the public sector as employer of last resort. We can suggest that institutional approaches focusing upon one industry, or one policy, thus requires a wider understanding of the role played by government within an economy if we are to gain a fuller picture of the consequences of institutional change.

5 Conclusion: a continuing role for industrial policy?

In the case study above we have examined the extent to which ideas linked to the Dutch disease, or a wider 'declinist' literature, fails to understand the totality of the changes undergone within the British economy through the 20th century.

By examining a classic example of the first industrial revolution, the jute industry which was a staple industry, we have been able to demonstrate that first firms' histories require a wider appreciation of the diversity and development of large organisations. The leading jute manufacturers, in response to increased competition within their established market, were capable of developing highly diversified strategies. These firms do not fit within a characterisation of being simply conservative or complacent. Instead they readily responded to opportunities as and when they arose. Indeed we can go further and suggest that without the support of industrial policy, 'feather-bedding', the firms themselves may not have survived long enough to be able to take advantage of the opportunities emerging by the 1960s and 1970s. As Jute Industries stated the timing of the movement into polypropylene was one dictated by the market opportunities, in particular the demand for synthetic carpet backing in the US market and in the case of the Low and Bonar's concentration upon the specialist synthetic textile market from the late 1970s again arose from the newly developed technologies of artificial fibres. Unrelated diversification strategies emerged still later with opening up of the North Sea for oil exploration in the later 1970s. While Booth, still working within the declinist school but from a more sympathetic stance, suggests that the British economy may have benefitted from a more rapid process of industrial transformation we would still have to suggest that it is not clear, at least in the case of jute, that the opportunity for this transformation was available prior to the 1960s (Booth, 2001, p.87).

The second conclusion we can draw from this case study is that in relation to the continuing role of government within the economy. Most significantly our study suggests government continues to play a major role in facilitating economic transitions. Industrial policy was perhaps more successful in facilitating the industry's transition from one sector to another rather than in its defence of a static industrial structure. In an increasingly globalised world where industries can both emerge and disappear rapidly such a role in managing economic transitions may be more important than ever. However, our case study suggests that ultimately the ability of firms to maintain their strategies for accumulation were underpinned by government as employer of last resort rather than through industrial policy.

Acknowledgement

I am grateful to the Leverhulme Trust for providing financial support in the undertaking of this research.

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Notes

¹In moving from the *Census of Production* to an industrial survey under the *Business Monitor* series in 1970 government data changed the measurement of quantity data from output measured in weight to yardage making direct comparison impossible.

²Polypropylene output in 1972 amounted to 196,681 sq.yds. compared to total yarn and cloth output of 231,997 sq.yds. *Census*, (1972), PA415, table 7.